[CHAPTER 9]

Protecting Workers and the Public

The mission of DPR is to protect public health and the environment from adverse effects of pesticide use. All DPR programs are oriented to that mission, by requirements for thorough data review of pesticides before sale or use, safety training of professional pesticide handlers, ongoing monitoring of people and the environment to detect potential situations for pesticide exposure, and local enforcement to ensure laws and regulations are being obeyed. This chapter focuses on programs conducted by the Department's Worker Health and Safety (WH&S) and Enforcement Branches.

With the establishment of the WH&S Branch in the 1970s, DPR instituted training requirements for pesticide handlers and established a pesticide illness reporting and investigation system unique in the nation. In 1992, DPR strengthened its training requirements by setting up a hazard communication program requiring employers to maintain and make available to their employees a written hazard communication program, pesticide use reports, and material safety data sheets. DPR also pioneered development of a national policy on the use of filtered-air enclosed cabs and closed mixing and loading systems as an alternative to personal protective equipment. DPR was the driving force behind development of this U.S. EPA program, which follows the principles of industrial hygiene by replacing personal protective equipment with engineering controls.

In 1994 and 1995, a new federal Worker Protection Standard was implemented nationwide, among other things revising employer requirements to give farm workers personal protective equipment and safety training. Although the federal standard drew on California's worker safety program as its model, there were significant differences between the two. In 1995, U.S. EPA recognized California's unique agricultural practices and worker safety program and conditionally approved a request by DPR for equivalency of its worker safety program. Approval became final with California's 1997 adoption of conforming regulations.

We believe it our duty to guard against a possibility of contamination detrimental to a user of economic poisons.
– 1939 Department annual report

Key Worker Protection Elements

California regulations require employers to ensure specific worker protection measures. For example, employers are responsible for:

Product Use Information – Pesticide product labels must be at the worksite and available to employees on request.

Hazard Communication – Employees must be made aware of the hazards they might face working with pesticides and what to do to protect themselves.

Training – Employees must be trained before being allowed to work with pesticides or in treated fields. Training is to include safety requirements for handling pesticides; the meaning of information on the pesticide label concerning human health effects; where exposure to pesticides might occur, and ways pesticides can enter the body; pesticide poisoning symptoms; emergency first aid; how to get emergency medical care; routine and emergency decontamination procedures; need for, limitations, use, and cleaning of personal protective equipment; prevention, recognition and first aid for heat-related illnesses; environmental consideration; and warnings about taking pesticides home.

Emergency Medical Care – Employers must arrange for emergency medical care for applicators.

Engineering Controls – Mechanical transfer systems which offer increased worker safety are required for mixing and loading of certain pesticide products.

Personal Protective Equipment (PPE) – The employer must provide all necessary protective clothing and equipment required for handling any specific pesticide. PPE must be clean and in good repair.

Records of Use – Records of where and when pesticides were used must be kept for most pesticide use situations.

Medical Supervision – This is required for employees working with the more toxic organophosphate or carbamate pesticides in the production of an agricultural commodity. If employees handle these pesticides six or more days in a month, the employer must pay for routine blood monitoring to ensure that these employees are not being overexposed to these pesticides.

Coordination with the County Agricultural Commissioners

DPR administers the State's occupational pesticide safety enforcement program with field enforcement carried out by staff from each County Agricultural Commissioner's office. Enforcement and Worker Health and Safety Branches provide coordination, supervision, and technical and legal support to the counties.

Any report of injury attributed to pesticides in California is investigated not only to ascertain if a faulty product or other violation is concerned, but also in order that knowledge of all circumstances surrounding the injury may minimize recurrence of the accident.
– 1944 Department annual report

Working under contract to DPR, County Agricultural Commissioners agree to perform certain pesticide enforcement activities. These enforcement activities range from investigations of pesticide-related illnesses to checking training and storage records of pest control companies. The contracts now specify that a higher priority be given to such enforcement activities as worker protection inspections, illness investigations, applications of certain high-toxicity pesticides, and agricultural applications of pesticides near parks or schools. Lower priority is given to activities such as routine inspections of growers or businesses with no recent violations. When DPR and the County Agricultural Commissioners put together their annual enforcement workplans, the pesticide illness statistics are reviewed to see where additional emphasis may be needed in education or enforcement.

The WH&S and Enforcement Branches conduct training sessions for County Agricultural Commissioner staff on illness investigative techniques. The two branches also provide a manual on illness investigations for State and county investigators. WH&S Branch's Pesticide Workplace Evaluation Program is targeted specifically at finding ways to reduce the number of pesticide-related illnesses. DPR trains CAC enforcement staff in principles of industrial hygiene and occupational safety so that they have the skills needed to expand beyond enforcement activities to help employers achieve a safe pesticide workplace. The training provides insights into the sources of pesticide-related illness and injury and offers practical measures to prevent these illnesses and injuries.

WH&S physicians and other staff are also available to consult with health care providers and local health authorities, often in conjunction with active illness investigations. In addition, DPR staff is available to consult with the medical community about pesticide-related concerns. The Department also conducts field studies each year to monitor pesticide exposures to workers performing routine tasks. The goal is to determine if additional measures are necessary to eliminate unacceptable exposures. *(See Chapter 6 for discussion of exposure assessments.)*

The WH&S Branch also produces a series of leaflets to help employers train their workers in pesticide handling and in working safely in and around where pesticides are used. The "Pesticide Safety Information Series" (PSIS) leaflets cover safety requirements for pesticide use in agriculture and in other work situations. There are leaflets specifically for the agricultural workplace and other leaflets addressed to nonagricultural settings where pesticides are used. Subjects include: hazard communication (worker rights), first aid, medical supervision, pesticide handler safety, pesticide storage and transportation, protective equipment and engineering controls, minimal exposure pesticides, and respiratory protection. The leaflets are available on DPR's Web site in English and in Spanish. California regulations require these documents be part of pesticide handler and field worker training.

Investigating Pesticide-Related Illnesses and Incidents

Incident Investigation: DPR or the County Agricultural Commissioners investigate reported incidents involving adverse human or animal health effects, alleged misuse of pesticides, or pesticide damage to crops, property, or the environment. Information gathered during these investigations helps determine possible violations of pesticide laws and regulations and subsequent enforcement actions. Investigations are also a critical element in evaluating pesticide use patterns and the effectiveness of the regulatory system. DPR uses the results to improve safety and better protect health and the environment.

The commissioner's office in the county where the incident occurred is the lead investigative agency. CAC staff works in consultation with a senior pesticide use specialist in the Pesticide Enforcement Branch, who can in turn draw on the expertise of other branches in the Department. For example, Worker Health and Safety (WH&S) and Medical Toxicology staffs provide assistance for incidents involving illnesses. Environmental Monitoring staff may assist when incidents involve environmental effects, and the Pesticide Registration Branch can provide experts in plant physiology and chemistry for incidents that adversely affect fish and wildlife. In some incidents involving human illness or injury, WH&S scientists become directly involved in the investigation, especially when there is no implication that pesticide misuse caused the injury.

Human effects incidents include pest control aircraft accidents, pesticide handler accidents, exposure to residues in treated areas (fields, offices, homes), and exposure from drift. Property incidents involve plant damage resulting from drift of a herbicide, bee kills, domestic animal poisonings, residues that result in the inability to market a crop or animal, or phytotoxic effects due to persistent residues in the soil. Environmental effects include contamination or damage to the environment, such as fish or wildlife kills; lake, stream, or ground water contamination; crop losses or property damage, and air pollution.

Pesticide incidents come to the attention of the Department and commissioners in a variety of ways: pesticide illness reports from physicians; citizen or employee complaints; reports from other government agencies; notification from pest control operators, growers, or labor contractors; or from State and county surveillance and compliance monitoring activities.

Certain incidents trigger special handling and are considered "priority" investigations (under criteria established by an agreement with U.S. EPA, Region 9). Counties must report them to DPR by the most expedient method. DPR in turn reports priority incidents to U.S. EPA, the State Department of Health Services, State Department of Fish and Game, and other affected government agencies.

Criteria triggering priority investigation status include episodes involving death, serious illness or injury, or illness to five or more persons; aircraft accidents; significant environmental contamination; property loss; fish and wildlife kills; or episodes occurring at or near California's state, tribal, or international borders. Cooperating agencies may become involved in a priority incident investigation from the onset, bringing their special expertise to bear.

Incident reports are routinely forwarded to the agricultural commissioners for investigation unless they pertain to a situation where the Food and Agricultural Code places primary investigative responsibility with DPR — such as pesticide registration, product quality, and product labeling. DPR and the agricultural commissioners take joint responsibility for investigation of illegal pesticide residues on produce. In addition, the Department of Industrial Relations investigates certain incidents, including those involving pesticide manufacturing, use of ethylene oxide, and arsenic used in wood preservative treatment.

Investigative reports are prepared at the conclusion of each incident investigation and the CACs may pursue enforcement actions. DPR attorneys monitor and help in the development of case files, and DPR may prosecute administrative cases or serve on prosecution teams with county district attorneys or the State Attorney General's office.

Accidents and injuries involving agricultural chemicals are investigated to see if any violation of law contributed to the mishap. Study of the details of some cases provides suggestions of advisable precautionary labeling or educational measures to avoid such accidents.
– 1954 Department annual report

The Pesticide Illness Surveillance Program

California has the nation's most comprehensive pesticide-illness monitoring system. As far back as 1993, the U.S. General Accounting Office concluded that "with the exception of the California state monitoring system, all (other state systems reviewed) were quite limited in coverage, comprehensiveness, and quality of information." The report went on to suggest that the California monitoring system "could serve as a technical model for (the U.S. Environmental Protection Agency) and selected states."

Records of pesticide-related illnesses and injuries among California workers have been maintained by various State agencies since the beginning of the 20th century, first by the State Department of Industrial Relations (DIR), then by the California Department of Public Health (later renamed the Department of Health Services). In 1972, the Legislature gave the then-Department of Agriculture primary authority over the safety of pesticide use in the agricultural workplace. In 1988, the regulations were revised to cover other, non-agricultural workplaces where pesticides are used (except for pesticide manufacturing, which is under the authority of Cal-OSHA). In 1991, with the creation of Cal/EPA, authority for regulating pesticide use was transferred to DPR.

In 1993, the U.S. General Accounting Office praised California's Pesticide Illness Surveillance Program, saying it "could serve as a technical model" for other states.

The purpose of DPR's Pesticide Illness Surveillance Program (PISP) is to evaluate the circumstances of pesticide exposures that result in illness. The PISP database provides the means to identify high-risk situations warranting DPR action to implement additional California restrictions on pesticide use. Staff regularly consults the illness data to evaluate the effectiveness of DPR's pesticide safety regulatory programs and assess the need for changes. New regulatory initiatives may spring from analysis of the cumulative database or in direct response to illness episodes.

Taking illness data into consideration, DPR may adjust the restricted entry interval following pesticide application, specify buffer zones or other application conditions, or require pesticide handlers to use protective equipment that meets certain standards. Since many illness incidents result from illegal practices, illness investigations direct the attention of State and county enforcement staff to significant noncompliance activities. In some instances, changes to pesticide labels provide the most appropriate mitigation measures, and DPR cooperates with U.S. EPA to develop appropriate instructions for pesticide users throughout the country.

Since 1971, California physicians have been required by law (Section 2950 of the Health and Safety Code) to report all pesticide-related illnesses or injury to the local health authority (usually a county department of health). Copies of the Pesticide Illness Report are to be sent by the health officer to the County Agricultural Commissioner, Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA), and DPR.

The Investigative Process

Although DPR does receive some reports via direct physician reporting, the majority of its reports come through the workers' compensation system. In California, any employed person may visit a physician and report that an illness or injury occurred on the job. The physician then examines the worker and submits a Doctors' First Report of Occupational Illness and Injury to the appropriate insurer for payment of the professional fee. Since doctors do not always file the required pesticide illness reports, WH&S staff also reviews the Doctors' First Reports, which California's Labor Code requires workers' compensation insurers to forward to the Department of Industrial Relations (DIR). WH&S staff regularly review reports at DIR and select for investigation by the agricultural commissioners any report that mentions a pesticide, or pesticides in general, as a possible cause of injury. Reports that mention unspecified chemicals also are investigated if the setting is one in which pesticide use is likely. In typical years, this procedure identifies two-thirds to three-quarters of the incidents investigated.

The agricultural commissioner of the county where the incident occurred investigates every reported illness. DPR provides guidance on collecting appropriate samples to document environmental exposures. As part of its technical support, DPR maintains specialized laboratories to analyze the samples. The CACs prepare reports describing the circumstances in which pesticide exposure may have occurred and any other relevant aspects of the case. When appropriate, the CACs request authorization from the affected

individuals to include pertinent portions of their medical records with the report. If investigations identify additional affected individuals, they are included in the investigation report and reflected in the PISP database.

WH&S staff evaluates physicians' reports and all the information the CACs have gathered, and classify incidents according to the circumstances of exposure to a pesticide. Excessive exposure to pesticides may cause illness by various mechanisms, and the surveillance program attempts to monitor all of them. Annual summaries and overviews of reported pesticide illnesses have been prepared since 1973 by WH&S Branch.

Improving Physician Reporting

A continuing problem has been a lack of direct reporting by physicians. Beyond identifying cases that might otherwise escape detection, direct physician reporting allows DPR and the CACs to investigate promptly, while the people involved remain accessible, with accurate recollection of the event. In 1994, DPR initiated a project to improve physician familiarity and compliance with the reporting requirement. DPR cooperated with DIR to send summaries of the reporting requirements to more than 70,000 physicians with active California licenses. DPR then followed up in 1995 and 1996 with individual correspondence to doctors who reported pesticide cases to workers' compensation insurers but not to their local health officers. This effort increased direct reporting but it still accounts for less than a quarter of the reports received. DPR continues to seek ways to expedite direct reporting while minimizing the burden on practitioners.

A pilot study in 1996 and 1997 demonstrated the feasibility of reporting through poison control centers. In 1997, DPR began working with the California Poison Control System to help physicians in identifying and reporting cases appropriately. Confidentiality considerations prevent poison control centers from reporting cases on their own initiative, but they can offer to report on behalf of physicians who consult them.

Because most illness reports come through the workers' compensation system, illnesses related to nonoccupational pesticide exposures are probably underreported. Nonetheless, because of the wide variety of reports — many in the nonagricultural workplace where pesticidal products are similar to those used by consumers — it is considered unlikely that major hazards escape detection.

For several years, WH&S has explored a variety of ways to improve and capitalize on the information collected through illness investigations. In the early 1990s, the database was expanded to include the age, gender, and Social Security number of the victim and the Standard Industrial Classification code of the victim's employer. Collection of information on age, gender, and job classification will allow the development of better demographic information to help predict categories of persons at highest risk. With a victim's Social Security number, investigators can better track possible development of chronic health effects.

Beginning in 1998, data were collected using a revised and enhanced computer program. The new system took a necessary first step toward making surveillance data available to the public via the Internet, and provided the opportunity to increase the amount of data collected and to organize it more logically while protecting individual privacy rights.

The most obvious change concerned the categories into which the program classifies the activities of the affected people. Under the former system, activity codes combined aspects of occupation, mechanism of exposure, and equipment used. For instance, one of the categories used previously was exposure to drift. The limits imposed by the previous system provided no way to differentiate among farm workers, applicators or others exposed to drift. Similarly, recording that a person was applying pesticides when exposed precluded indicating the manner of exposure, except as part of a narrative description. The new, expanded system provides three separate entries for activity, exposure, and equipment used. DPR can identify the activities of people who were drifted upon and distinguish among sprays, spills, and drift exposures to applicators. The new system also allows DPR to record registration numbers, types of formulation, and

Whenever commercial exploitation follows closely upon discovery of a new agricultural chemical, particular care is required to provide adequate labeling for assurance that the product will be used properly and with satisfaction and that injury will not result from careless or unadvisable handling.
– 1945 Department annual report

application dates and sites individually for an unlimited number of different pesticides in each case. This will allow DPR to respond more fully and accurately to inquiries about particular products and uses.

DPR staff also participates in the working group convened by the National Institute for Occupational Safety and Health (NIOSH) to develop standards for collection of information on pesticide illnesses. NIOSH now partially supports programs in the states of Florida, New York, Oregon, and Texas that make use of the standards the working group defined. This NIOSH program also supports pesticide work by the Occupational Health Branch of the California Department of Health Services, which coordinates closely with the DPR program.